

REMARKS

By the above amendment, informalities in the specification have been corrected, claim 1 has been amended to incorporate features of dependent claim 3 therein, while clarifying other features of the present invention, with claim 3 being canceled, claim 12 has been amended to define further features of the illumination optical system, while reciting the feature of an ultraviolet laser-generating device, with dependent claims 13, 14 and 17 being canceled and claim 15 being amended in accordance with the features of claim 12. Additionally, claim 18 has been amended to refer to an object to be inspected rather than a test object, with claim 19 being amended in a similar manner to claim 12 and reciting the features of the illuminating system utilized for illumination in the manner similar to that of claim 12. Applicants submit that the claims, as amended, patentably distinguish over the cited art as will become clear from the following discussion.

The rejection of claims 1, 2 and 9-19 under 35 U.S.C. 103(a) as being unpatentable over Noguchi (377) in view of Kikuchi (009) and the rejection of claims 3-8 under 35 U.S.C. 103(a) as being unpatentable over Noguchi (377) in view of Kikuchi (009) and in further view of Sandland (172), such rejections are traversed insofar as they are applicable to the present claims, and reconsideration and withdrawal of the rejections are respectfully requested.

As to the requirements to support a rejection under 35 U.S.C. 103, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under §103 to establish a prima facie case of obviousness and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or

suggestion supporting the combination. As further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

Furthermore, such requirements have been clarified in the recent decision of In re Lee, 61 USPQ 2d 1430 (Fed. Cir. 2002) wherein the court in reversing an obviousness rejection indicated that deficiencies of the cited references cannot be remedied with conclusions about what is "basic knowledge" or "common knowledge".

The court pointed out:

The Examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is immaterial to patentability, and could not be resolved on subjected belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher."... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion. (emphasis added)

Applicants note that as described in the specification of this application, the prior art as described in the specification of this application while providing various features, fail to give proper consideration to the prevention of adhesion or attaching of contaminating materials onto the optical resonator as a whole without receiving ill influence with regard to increased temperature of a non-linear optical element while providing a simple construction. Therefore, as described in the last paragraph at page 5 of the specification, an object of the present invention is to avoid the problems of the prior art and to provide an ultraviolet laser-generating device which is simple in structure while enabling conversion of the laser ray with superior

efficiency and preventing adhesion or attaching of contaminants on the whole optical resonator including the non-linear optical crystal, but without receiving ill influence from heat generated by the non-linear optical element, in particular, in the wavelength converter thereof, and without decrease of intensity of an output of the ultraviolet laser ray, while obtaining a long lifetime thereof. Thus, in accordance with the present invention, structural features are provided to enable the same as described in the last paragraph at page 6 of the specification. For example, in accordance with the present invention, as illustrated in Figs. 6 and 7 and as described at page 23, line 19 et. seq. of the specification, the wavelength converter device 5 is provided in a container 41 which is hermetically sealed and is provided with a discharge valve 33 connected to a discharge pump (not shown) for discharging residual gas within the container 41, and a supply valve 32 is provided for supplying a gas such as an inert gas which does not chemically react with the laser ray, there is obtained a construction which prevents foreign matter from coming into the container so as to maintain the surfaces of the mirrors and crystal within the container or optical resonator always clean and to prevent a decrease of the ultraviolet laser ray in the output intensity thereof. As described in the last paragraph of page 24, with this construction, it is possible to continue to run the inert gas at very small amount, so that no fluctuation occurs in the laser ray. Applicants note that claim 1 has been amended to essentially incorporate the features of dependent claim 3 therein, including the feature that the container is hermetically sealed and the container includes means for discharging residual gas within the container and means for supplying inert gas which does not chemically react with the laser ray into the container. Thus, claim 1 and its dependent claims now recite the aforementioned features.

Also, in accordance with the present invention, as illustrated in Fig. 1, for example, and as described at pages 14-16 of the specification of this application, the ultraviolet laser ray which is emitted from the source 3 and is converted by the

wavelength converter 5, and passes through a beam expander 6, further passes through an optical system 7 provided for the purpose of coherence reduction, a lens 8, a polarization light splitter 9 and a group 10 of polarizer elements so as to be incident upon an objective lens 11 for irradiation upon the object to be inspected. As described in the last paragraph at page 15 of the specification, the polarization light splitter 9 has a function of reflecting the laser ray when the polarization direction thereof is in parallel with the reflection surface, while penetrating it when that is perpendicular thereto and since the ultraviolet laser ray generated by the ultraviolet laser ray source 3 is inherently a polarization laser ray, the polarization light splitter 9 is positioned so that the ultraviolet laser ray emitted from the coherence reduction optical system 7 is reflected by the total reflection thereon. Further, the group 10 of polarizer elements control the laser illumination ray and the reflection light so as to adjust the rate of polarization in the illumination light so that the reflection light does not reach upon the image sensor 13 accompanying with unevenness in brightness due to the shapes of the patterns and the difference in density thereof. As such, the light irradiating from the group 10 of polarizer elements upon the object 1 for illumination comes to be light that is circularly polarized. By the present amendment, independent claims 12 and 19 have been amended to recite the aforementioned features including an illumination optical system having a polarized beam splitter and a group of polarizer elements for illuminating the object. As described, this structural arrangement enables proper illumination and proper detection of an optical image of the object to be inspected.

Applicants submit that the features as now recited in independent claims 1, 12 and 19 and the dependent claims thereof are not disclosed or taught in the cited art, as will become clear from the following discussion.

Turning first to independent claim 1, as amended, to incorporate the features of dependent claim 3 therein, such that it is assumed that the rejection based upon the cited art of Noguchi, Kikuchi and Sandland becomes applicable thereto,

applicants submit that none of this cited art discloses or teaches the claimed features. More particularly, in setting forth the rejection of claims 3-8, based upon the combination of Noguchi, Kikuchi and Sandland, the Examiner apparently recognizes that the recited features therein are not disclosed by the prior combination of Noguchi and Kikuchi. That is, the Examiner states:

Sandland (172), discloses environmental covers in FIG. 4A, which surround the area through which the wafer passes during inspection so as to provide environmental control. One such arrangement is shown in FIG. 4A where a fixed cover 107 is attached to fixed member 105 of stress frame 104, and a floating cover 111 is attached to aluminum casting 110. This creates an air lock 113 between the two overlapping covers because the interior of the wafer inspector is maintained at a positive pressure. Air passing through the air lock under pressure prevents outside contaminants from entering the inspection area, as recited in Claim 20.

Irrespective of the Examiner's contention, applicants submit that Sandland does not disclose or teach the recited features of claim 1, as amended, that the container includes means for discharging residual gas within the container, and means for supplying inert gas which does not chemically react with the laser ray into the container. That is, while the Examiner indicates that Sandland discloses a construction which creates an airlock to maintain the interior of the wafer inspector at a positive pressure and air passing through the airlock under pressure prevents outside contaminants from entering the inspection area, and therefore "it would have been obvious to any one of ordinary skill in the art that one could design an inspection system according to Noguchi (377), and use the environmental controls in accordance with the teachings of Sandland (172) to provide a controlled environment for defect inspection, thereby reducing the probability of inspection induced defects." (emphasis added), applicants note that none of the cited patents including Sandland (172) disclose or teach the recited features of gas discharging means and gas supply means of the container as recited in claim 1, as amended, and the dependent claims, and the Examiner's position represents utilization of "obvious to try" which is

not the standard of 35 U.S.C. 103. See In re Fine, supra. Furthermore, as to what one could design to provide desired features, this position has been rejected by the court in In re Lee, supra. As to the Examiner's reference to U.S. Patent No. 6,396,061, applicants note that such patent number is not utilized in the statement of the ground of rejection, and is considered improper. See In Hoch, 166 USPQ 406 (CCPA) 1970 and MPEP §706.02(j). Thus, irrespective of the Examiner's contentions, none of the cited art disclose or teach the recited features of claim 1 and the dependent claims in the sense of 35 U.S.C. 103, and applicants submit that claim 1 and the dependent claims patentably distinguish over the proposed combination of Noguchi, Kikuchi and Sandland, taken alone or in any combination thereof. Accordingly, applicants submit that claim 1 and its dependent claims should now be considered allowable.

With respect to the features of independent claims 12 and 19 and the dependent claims thereof, applicants note that such claims define the illumination of the object to be inspected by way of an ultraviolet laser ray passing through a coherence reduction optical system, a polarized beam splitter and a group of polarizer elements to irradiate the object to be inspected. Applicants submit that such features are also not disclosed or taught in the cited art.

Turning to Noguchi, the Examiner refers to an illumination optical system 100 having a laser-beam source 101, a beam splitter comprising a concave lens 102 and a convex lens 103 and an illumination lens 104 having a conical surface. Irrespective of the Examiner's position, applicants submit that Noguchi does not disclose or teach a polarized beam splitter and a group of polarizer elements arranged in an illumination system as claimed which, as described above, provide for improvements in illumination. With respect to Kikuchi, applicants submit that this patent also does not disclose or teach the features of a polarized beam splitter and a group of polarizer elements in an illumination optical system arranged in the manner defined, such that the proposed combination fails to provide the claimed features as

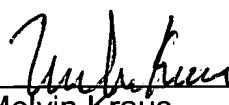
set forth in independent claims 12 and 19 and the dependent claims thereof. Likewise, applicants submit that Sandland also does not disclose or teach such claimed features. Thus, applicants submit that claims 12 and 19, as amended, patentably distinguish over the cited art in the sense of 35 U.S.C. 103 and such claims should be considered allowable thereover.

With respect to the dependent claims, applicants note that such claims recite further features when considered in conjunction with the parent claims thereof, further distinguish over the cited art in the sense of 35 U.S.C. 103, such that applicants submit that the dependent claims and the independent claims should now be in condition for allowance.

In view of the above amendments and remarks, applicants submit that all claims present in this application should now be in condition for allowance, and issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (520.39440X00) and please credit any excess fees to such deposit account.

Respectfully submitted,



Melvin Kraus
Registration No. 22,466
ANTONELLI, TERRY, STOUT & KRAUS, LLP

MK/cee
(703) 312-6600